

## Chapter 6

### Capital Improvement Program

## 1.0 Introduction

This chapter outlines the Capital Improvement Program required to support public transportation within the City of Alexandria and covers the full range of public transportation providers within the City. Capital improvement requirements are outlined by capital asset category.

In some instances, for projects outlined below that are included in the Commonwealth's Six Year Improvement Program (SYIP), there are slight differences between the funding budgeted in the City's Capital Improvement Program and the funding identified in the SYIP. These differences relate to the process for the transfer of funds from the SYIP to cover the City's expenditures. The process starts with the expenditure of funds by the City of Alexandria. The City then applies to the Commonwealth for reimbursement of these funds. This reimbursement is not sent directly to the City but rather is funneled through NVTC to cover a portion of the City's required subsidy to WMATA (NVTC handles the WMATA subsidy transfers from each Northern Virginia jurisdiction and then bundles them for transfer to WMATA). Under this reimbursement process the City keeps the dollars that it would have otherwise transferred to NVTC to cover a portion of its WMATA subsidy requirements. This rather indirect flow of reimbursement funds means that there may be slight differences between what was budgeted in the Six Year Improvement Program and the City's Capital Improvement Program.

It should also be noted that the City of Alexandria intends to take full advantage of all Commonwealth capital funding sources available to it over the six-year time frame of this Transit Development Plan. For all bus replacement and expansion, the City will be applying for DRPT matching funds (see Table 6.1 below for the projected state match for different capital asset categories).

It should also be noted that the City will be seeking a multi-year capital funding agreement with the Commonwealth to cover a portion of the capital costs of the West End Transitway/Corridor C. In addition, the City now anticipates shifting the construction of Corridor C to start in 2018 or 2019. This change will be reflected in the City's next Fiscal Year Capital Improvement Program.

**Table 6.1 – Projected Capital Funding State Match by Capital Asset Category, by Fiscal Year**

Capital Asset Category	FY 2017	FY 2018	FY 2019	FY 2020	FY20121
Replacement & Expansion Vehicles (Tier 1)	68%	68%	68%	68%	68%
Infrastructure/Facilities (Tier 2)	5%	34%	8%	6%	0%
Other Eligible Capital Items (Tier 3)	0%	17%	0%	0%	0%

## 2.0 Revenue Vehicles

### 2.1 Vehicle Replacement

DASH has an extensive program for replacing vehicles as they reach the end of their useful life. The current City of Alexandria policy is to replace vehicles being retired with Hybrid vehicles, each at an estimated cost of \$650,000 through FY 2018, \$675,000 in FY 2019 through FY 2022. These vehicles would be standard 35' or 40' coaches and would be comparable in configuration to vehicles in the current DASH revenue fleet, with an estimated life of 12 years. The current City Capital Improvement program has budgeted \$25,975,000 for DASH revenue vehicle replacement over the six-year time frame of this TDP. The schedule of planned revenue vehicle replacements is shown below in Table 6.2.

**Table 6.2 – DASH Vehicle Replacement Schedule**

	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22
# of Vehicles	6	6	6	6	6	4	5
Unit Cost	\$650,000	\$650,000	\$650,000	\$675,000	\$675,000	\$675,000	\$675,000
Total Cost	\$3,900,000	\$3,900,000	\$3,900,000	\$4,050,000	\$4,050,000	\$2,800,000	\$3,375,000

As noted, \$25,975,000 of the required vehicle replacement funds identified in Table 6.2 has been budgeted in the City's Capital Improvement Program over the six-year time frame of this TDP. A portion of this total vehicle replacement budget is included in the Commonwealth Six Year Improvement Program (SYIP) (\$2,448,000 of the total to be provided by state funds).

WMATA Metrobus vehicle replacements are covered under the WMATA Capital Improvement Program, which is funded by the jurisdictions within the WMATA service area (see more detail regarding City of Alexandria capital funding contributions to WMATA under Section 8 of this chapter).

DOT Paratransit service is provided with contractor vehicles and therefore has no fleet requirements.

VRE vehicle replacements are covered by VRE's Capital Improvement Program.

### 2.2 Fleet Expansion

The operating plan scenario for the moderate subsidy growth scenario financial plan, as outlined in Chapter 5, would require four additional vehicles to support the service improvement and would be implemented in FY 2020. At an estimated cost of \$675,000 per vehicle, the required capital funds to support this service expansion are \$2,700,000. This fleet expansion cost is not included in the City's Capital Improvement Program or in the Commonwealth's Six Year Improvement Program.

The unconstrained operating plan vision for DASH as outlined in Chapter 5 would require 41 new vehicles over the six-year time frame of the TDP to support the service improvements identified in that vision. This would translate into a capital requirement to support these service improvements of \$27,675,000 based on an average price per vehicle of \$675,000. The capital cost associated with this unconstrained fleet expansion is not included in the City's Capital Improvement Program or in the Commonwealth's Six Year Improvement Program.

As shown in Chapter 5, any WMATA service improvements impacting Alexandria would be cost-neutral, with cuts on one service to support service improvements on other lines. This approach would also mean no net change in vehicles required to meet new service.

### 3.0 Passenger Facilities

Alexandria has undertaken an extensive capital improvement program associated with passenger facilities on its different public transportation services. Each of these passenger facility improvements is incorporated into the City's Capital Improvement Program. At this point there are no additional unfunded passenger amenity improvements that are planned for implementation during the six-year time frame of this TDP. A summary of the passenger facility capital improvements is outlined below. In addition, none of the improvements summarized below are included in the Commonwealth's Six Year Improvement Program.

#### 3.1 Alexandria Metrorail Stations Improvements

The CIP line items cover a series of capital improvements at three of Alexandria's Metrorail Stations: Eisenhower Avenue, King Street-Old Town, and Van Dorn Street. Overall improvements at the three stations include pedestrian improvements, improvements to kiss-and-ride and bus bay areas and station access improvements. Specific improvements at each station include:

##### 3.1.1 Eisenhower Avenue Metrorail Station

Improvements at the Eisenhower Station are being made to accommodate proposed development and redevelopment in the Eisenhower East section of Alexandria. The City has agreed to fund several improvements to the Station, including renovation of the bus loop at the station, service relocations, design and construction of an attractive pedestrian plaza in front of the station, the addition of canopies for sheltering riders, and real-time bus arrival information displays. The capital funds committed for these improvements over the next six years is \$1,574,229. Previous expenditures on this project are \$4,742,085, for a total project cost of \$6,316,314

##### 3.1.2 King Street-Old Town Metrorail Station

Improvements to the King Street-Old Town Metrorail station are being made to accommodate increased bus service to the station as well as to accommodate increased ridership. Improvements are also being made to strengthen connections between the station and the surrounding area, for all modes of transit. The planned station reconfiguration will include segregation of modes to improve safety, widening of walkways around and through the facility, space for short and long-term bicycle storage, and modification of the kiss-and-ride into a one-way loop. The capital funds committed for these improvements over the next six years is \$3,700,000. Previous expenditures on this project are \$7,995,878, for a total project cost of \$11,695,878.

##### 3.1.3 Van Dorn Street Metrorail Station

Improvements to the Van Dorn Metrorail Station will include the re-design of the kiss-and-ride area at the station in order to accommodate the large number of private shuttles that serve the station. In addition, the bus loading area will be reconfigured to accommodate buses from the

West End Transitway. The capital funds committed for these improvements over the next six years is \$2,170,000. This is also the total project cost.

### 3.2 Potomac Yard Metrorail Station

This project involves the development of a new Metrorail Station on the Blue and Yellow Lines in Potomac Yard, with the purpose of supporting the significant proposed development in Potomac Yards. The Draft Environmental Impact Statement for the project is currently available for public review, with a Final EIS planned for the Fall of 2015 and a Record of Decision in early 2016. The capital funds committed in the City's Capital Improvement Program for this project over the next six years is \$274,000,000. Previous expenditures on this project are \$11,864,325, for a total project cost of \$285,864,325. This project is also included in the Washington Region's Constrained Long Range Plan but is not included in the Commonwealth's Six Year Improvement Program.

### 3.3 Bus Shelters and Benches

This project will replace existing shelters and benches with new enhanced infrastructure that will improve passenger convenience and comfort. The focus will be on replacing current infrastructure that has exceeded its useful life and also on bringing existing stops into compliance with ADA standards. The capital funds committed for these improvements over the next six years is \$870,000. Previous expenditures on this project are \$3,438,973, for a total project cost of \$4,308,973. This project is not included in the Commonwealth's Six Year Improvement Program.

### 3.4 Landmark Transit Station

This project provides funding for initial planning, design and acquisition of transit center amenities for a transit center at the Landmark Mall. Ultimately this facility would be a key transfer point between the proposed West End Transitway and the proposed Duke Street Transitway. No funds for this project are committed during the six-year time frame of this TDP but \$6,000,000 is committed in the City's Capital Improvement Program in fiscal years 2023 and 2024. This project is not included in the Commonwealth's Six Year Improvement Program but is included in the Washington Region's CLRP.

### 3.5 Alexandria Union Station

Both VRE and AMTRAK are planning service expansions over the coming years as additional track capacity is added, especially along the Fredericksburg line. While no specific plans for capital improvements at the Station beyond what is identified under Section 9.0 below (VRE capital improvements), additional capital improvements to support service expansion may be required.

## 4.0 Tool and Equipment Upgrades/Replacement

This section outlines capital funding requirements for tool and equipment upgrades or replacement. One project has been identified for DASH. WMATA equipment upgrades are covered under their Capital Improvement Program, which is partially funded with contributions from the City of Alexandria (see below under section 8 for more detail).

#### 4.1 Hybrid and Trolley Battery Pack Replacement

This improvement involves replacement of DASH hybrid transit vehicle battery packs that have reached the end of their useful life (useful life is estimated at five years). \$1,900,000 in funding is committed in the City's Capital Improvement Program for battery pack replacements over the six-year time frame of this TDP (additional funding is included in the out years of the CIP that are not covered in this TDP). Previous expenditures on this project are \$100,000, for a total project cost through FY 2022 of \$2,000,000. A portion of the total cost of the Hybrid Battery Pack upgrades is included in the Commonwealth's Six Year Improvement Program.

#### 5.0 Technology Upgrades

This section identifies committed and proposed technology upgrades to support public transportation operations within Alexandria, with the identified projects primarily focused on supporting DASH operations. Some of the identified projects have committed funds while others have been identified for implementation but are not funded in the City's Capital Improvement Program. Each improvement is summarized below.

##### 5.1 Region's New Electronic Payment Program (NEPP) – DASH Upgrades

Over the next several years, WMATA will upgrade to a new fare payment system called the New Electronic Payment Program (NEPP). This project will fund the upgrade of the DASH fare system to integrate with the new regional fare system. \$1,200,00 is committed in the City's Capital Improvement Program to this improvement over the six-year time frame of this TDP. There have been no previous expenditures on this project.

A second piece of this program is upgraded fare collection technology for the U.S. 1 Metroway, which will be an essential technology to aid in the implementation of off-board fare collection along the Metroway. This project will fund the procurement of the off board fare collection hardware and software. \$1,500,00 is committed in the City's Capital Improvement Program to this improvement over the six-year time frame of this TDP. There have been no previous expenditures on this project. There have been no previous expenditures on this project.

Neither of these projects is included in the Commonwealth's SYIP.

##### 5.2 Real Time Bus Information System/Other Analytic Capabilities

In May 2013 the City of Alexandria entered into an agreement to purchase an Automatic Vehicle Location (AVL) system for the DASH system and has been implementing since that agreement. This AVL system is the foundation for real time passenger information as well as additional analytic capabilities that have not yet been funded. This program would involve additional investments in transit technology by DASH. These additional investments would build on the Automatic Vehicle Location improvements currently underway. These additional improvements include:

- Real-Time Passenger Information – Not having a full understanding of when a bus will arrive is one of the major impediments to attracting new riders and riders who have a choice regarding which mode they will utilize. Real time passenger information, based on the AVL system, is a key means of addressing this impediment. This project will include real-time arrival information

signs at heavily used bus stops as well as the capability for riders to access this information via a hand-held device.

- Computer Aided Dispatch (CAD) capabilities – Computer aided dispatch would provide a significant leap forward over current operations controls. Currently DASH is operating at a disadvantage regarding understanding where buses are at any given time, with this understanding of revenue bus locations based on communications with drivers and street supervisors via radio or phone.

Computer aided dispatch, building on the AVL base, would give an Operations Control Center a complete picture of where every bus in revenue service is located. This capability allows DASH to maintain much tighter control over bus movements. This will allow DASH to be much more proactive in operations, thus improving service reliability and rider convenience. Ultimately, implementation of CAD may also result in a need for fewer street supervisors.

- Automated passenger counters – Currently the only means for DASH to collect boarding and alighting data by stop is through labor intensive manually collected on-board ridechecks. This approach is not only costly but it also means data is not collected on a routine basis, leading to out-of-date data. Automatic Passenger counters collect boarding and alighting data electronically on every trip and every day. The data provided by automated counters is an extraordinary leap over manual ridechecks, and provides the foundation for much more sophisticated service planning. This enhanced service planning, in turn, allows for much more pinpoint service modifications such that the most successful and productive routes are provided necessary resources. It also allows much more sophisticated response to passenger issues such as bus crowding.
- Data Management System – The additional data collected by the AVL-based systems described above will be immense. This data management system will support the mining and storage of this data such that it can be used for the purposes identified above. This system will be an integral part in making the most effective use of the data to be collected.

Funding for these additional capabilities has not yet been dedicated in the City's Capital Improvement Program. Estimated cost for this program in FY 2016 is \$603,000.

## 6.0 High Capacity Transit Corridors

The City of Alexandria has had an initiative underway for many years for the planning and implementation of high capacity transit corridors in high density and high growth areas of the City. The Route 1 Transitway, which is now home to the WMATA-run Metroway service, was completed in 2014. Planning for one additional corridor is underway and a third corridor has been identified for implementation in later years. Each corridor is summarized below.

### 6.1 West End Transitway

This project involves the development of a dedicated transitway, where possible, between the Van Dorn Street Metrorail station and the Pentagon Transit Center. The project is currently in the planning (Alternatives Analysis and Environmental Assessment) and preliminary design (Conceptual Engineering) phases and is funded to move into more detailed design within the next few years and construction within the time frame of the TDP. \$89,340,000 has been committed to this project for design and

construction over the six-year time frame of this TDP. This committed funding is currently concentrated in fiscal years 2016 through 2019, though this is likely to be updated in the next Fiscal Year Capital Improvement Program as the City anticipates moving the construction of the transit way out a couple of years from its current schedule. Operations funding for this project has not been specifically committed but City of Alexandria staff anticipate funding coming from the City's Transportation Improvement Program. This project is included in the Commonwealth's SYIP and is also included in the Washington Region's CLRP.

## 6.2 Corridor B – Duke Street Transitway

This is a longer-term transitway project that would provide a combination of dedicated lanes and a reversible dedicated transit lane along the Duke Street corridor. Funding is available to support planning and preliminary design beginning in FY 2020. \$2,310,000 has been committed to this project in the City's Capital Improvement Program during the six-year time frame of this TDP. This project is not covered in the Commonwealth's SYIP but is included in the Washington Region's CLRP.

## 7.0 Operations and Maintenance Facilities

One project has been identified related to operations and maintenance facilities. This project is summarized below.

### 7.1 DASH Bus Storage Expansion

Alexandria Transit is reaching its bus storage parking limits. A temporary solution has been implemented but this capital item would involve a long-term solution to accommodate long-term fleet expansions. Funds to support this expansion are not yet committed in the City's Capital Improvement Program. Estimated cost for this capital item in FY 2016 is approximately \$509,000.

## 8.0 WMATA Capital Contributions

This CIP line item is for City of Alexandria funding contributions to support the WMATA Capital Improvement Program. City contributions to the WMATA Capital Improvement Program over the six-year time frame of this TDP, as outlined in the City's FY 2016 Capital Improvement Program, is \$79,960,000. This contribution will support maintenance of base infrastructure as well as support to implement Metro 2025 improvements. WMATA capital contributions are included in the Commonwealth's SYIP, broken out by category. These are summarized below in Table 6.3 for FY16.

**Table 6.3 – WMATA Capital Contributions in SYIP**

Category	Total	State Contribution
WMATA CIP – Tier 1	\$7,476,323	\$1,556,441
WMATA CIP – Tier 2	\$15,083,617	\$5,030,934
WMATA CIP – Tier 3	\$2,447,764	\$416,120
Jurisdiction Debt Service	\$1,013,171	\$344,478
WMATA Project Development	\$133,000	\$22,610
Total	\$26,153,875	\$7,370,583



## 9.0 VRE Capital Improvements

There are a number of capital improvements contained in the VRE long range capital plan that will have an impact on Alexandria residents. While the City of Alexandria does not have funding responsibilities relative to these improvements, a description of the improvements was deemed important given their potential impacts to the City. Each proposed improvement is summarized below.

- Alexandria Station and Tunnel Improvements – This proposed improvement would include:
  - The design and construction of a pedestrian tunnel between Alexandria Union Station and the King Street Metrorail Station.
  - Modification of the west side platform within Alexandria Union Station to service trains from both sides of the platform.
  - Modification of the Slaters Lane crossover to enhance capacity and improve operating flexibility.
- Fredericksburg Line Third Track – VRE has been working in sections on adding a third track to the VRE Fredericksburg Line in order to increase capacity and operational flexibility. The next third track section contained in the VRE Capital Plan is between Franconia/Springfield and Woodbridge. Improvements in capacity and operational flexibility will have a positive benefit for riders boarding at Alexandria Station, including ultimately improved VRE service frequency.
- L'Enfant Mid-day Storage – This improvement would provide for a new storage track in the L'Enfant area to help alleviate capacity constraints at the main storage yard in Ivy City in the District of Columbia. As with the third track, this improvement will be part of a set of improvements that will allow for a greater VRE service frequency at Alexandria Union Station, to the benefit of Alexandria residents.
- Long Bridge Expansion – This improvement would include a new two-track bridge over the Potomac River as well as upgrades to the existing bridge. This improvement would be part of a set of improvements that would allow for greater operational flexibility and added capacity to support additional trains in service, to the benefit of Alexandria.
- Southeast High Speed Rail Corridor – this project is examining the feasibility of additional rail capacity between Washington D.C. and Atlanta. This would result in additional service at Alexandria Union station, thus potentially increasing the need for additional improvements at the station.

Transit capital expenditures by asset category over the life of the TDP are summarized below in Table 6.4. The data in the Table includes projects for which funds are already committed in the City Capital Improvement Program as well as projects that do not yet have committed funding (more detail is provided in Table 7.28 in Chapter 7). It should also be noted that the funding needs for buses for service expansion assumes the “moderate subsidy growth” service expansion scenario.

**Table 6.4 – Capital Requirements by Asset Category**

	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22
<b>Capital Cost Item</b>							
<b>Buses</b>							
Replacement Buses - # of vehicles	6	6	6	6	6	4	5
Replacement Buses - Cost	\$3,900,000	\$3,900,000	\$3,900,000	\$4,050,000	\$4,050,000	\$2,700,000	\$3,375,000
Service Expansion Buses	0	0	0	0	4	0	0
Moderate Subsidy Growth Scenario	\$0	\$0	\$0	\$0	\$2,700,000	\$0	\$0
Passenger Facilities	\$9,274,229	\$271,500,000	\$940,000	\$0	\$0	\$600,000	\$0
Tools & Equipment	\$100,000	\$150,000	\$250,000	\$300,000	\$350,000	\$350,000	\$400,000
Technology Upgrade	\$0	\$603,000	\$0	\$500,000	\$950,000	\$1,250,000	\$0
High Capacity Transit Corridors	\$2,400,000	\$22,340,000	\$32,100,000	\$32,500,000	\$210,000	\$0	\$2,100,000
O&M Facilities	\$0	\$509,000	\$0	\$0	\$0	\$0	\$0
WMATA Capital Contributions	\$8,310,000	\$7,700,000	\$7,500,000	\$14,300,000	\$13,900,000	\$15,900,000	\$11,500,000
Total	\$23,984,229	\$306,702,000	\$44,690,000	\$51,650,000	\$22,160,000	\$20,800,000	\$17,375,000
<b>Anticipated Funding Sources - State SYIP</b>							
Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	n/a
State Funds	\$3,598,000	\$3,973,000	\$13,575,000	\$4,858,000	\$2,716,000	\$2,031,000	n/a
Local Assistance	\$20,386,229	\$302,729,000	\$31,115,000	\$46,792,000	\$19,444,000	\$18,769,000	n/a